

# Executive Summary

## Introduction

On October 21, 1998, the President signed into law the American Fisheries Act (AFA) which mandated sweeping changes to the conservation and management program for the pollock fishery of the Bering Sea and Aleutian Islands (BSAI) and to a lesser extent, affected the management programs for the other groundfish fisheries of the BSAI the groundfish fisheries of the Gulf of Alaska (GOA), the king and Tanner crab fisheries of the BSAI, and the scallop fishery off Alaska. With respect to the fisheries off Alaska, the AFA requires a suite of new management measures that fall into four general categories: (1) regulations that limit access into the fishing and processing sectors of the BSAI pollock fishery and that allocate pollock to such sectors, (2) regulations governing the formation and operation of fishery cooperatives in the BSAI pollock fishery, (3) regulations to protect other fisheries from spillover effects from the AFA, and (4) regulations governing catch measurement and monitoring in the BSAI pollock fishery.

Under the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (Magnuson-Stevens Act), the North Pacific Fishery Management Council (Council) has prepared FMP amendments to implement the provisions of the AFA in the groundfish, crab and scallop fisheries off Alaska. These are Amendment 61 to the *Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area*, Amendment 61 to the *Fishery Management Plan for Groundfish of the Gulf of Alaska*, Amendment 13 to the *Fishery Management Plan for the King and Tanner Crab Fisheries in the Bering Sea/Aleutian Islands*, and Amendment 8 to the *Fishery Management Plan for the Scallop Fishery off Alaska* (Amendments 61/61/13/8). The full text of Amendments 61/61/13/8 is contained in Appendix B. The purpose of Amendments 61/61/13/8 is to incorporate the relevant provisions of the AFA into the FMPs and establish a comprehensive management program to implement the AFA.

The purpose of this Environmental Impact Statement (EIS) is to provide decision makers and the public with an evaluation of the environmental and economic effects of the management program that would be implemented under proposed Amendments 61/61/13/8, as well as the effects of alternative management programs to implement the AFA. It is intended that this EIS serve as the central environmental document for management measures developed by NMFS and the Council to implement the provisions of the AFA.

## Primary elements of Amendment 61/61/13/8

Amendments 61/61/13/8 were developed by the Council during an extensive public process over the course of 12 Council meetings. Each alternative is presented in the same format and contains the same four primary management components that are necessary to implement the provisions of the AFA in the fisheries off Alaska. These components are (1) Limited access and sector allocations, (2) fishery cooperatives, (3) Sideboards, and (4) Catch weighing and monitoring.

**Component 1: Limited access and sector allocations.** This management component includes regulations that (1) define the various sectors of the BSAI pollock industry, (2) determine which vessels and processors are eligible to participate in each industry sector, (3) establish allocations of BSAI pollock total allowable catch (TAC) to each industry sector as directed fishing allowances, and (4) establish excessive share limits for harvesting BSAI pollock. These regulations are necessary to achieve the AFA's objective of decapitalization and rationalization of the BSAI pollock fishery. The AFA addresses these

issues with explicit statutory. The Council and NMFS do not have authority to recommend or implement a program that would define the pollock industry sectors differently, change the sectors allocation percentages, or change the lists of vessels and processors that are authorized to participate in each sector. Consequently, all four of the AFA-based alternatives in this EIS (Alternatives 2-5) mirror the provisions of the AFA with respect to pollock industry sectors and sector allocations.

**Component 2: Fishery cooperatives.** This management component addresses the formation and management of fishery cooperatives. Fishery cooperatives are a relatively new type of entity in the groundfish fisheries of the North Pacific and are formed by groups of vessel owners to provide an alternative to the open access race for fish. Under a fishery cooperative, the members of a cooperative agree to divide up the available quota among themselves in a manner that eliminates a wasteful race for fish and allows participants to maximize productivity. The AFA authorizes the formation of fishery cooperatives in all sectors of the BSAI pollock fishery, grants anti-trust exemptions to cooperatives in the mothership sector, and imposes operational limits on fishery cooperatives in the BSAI pollock fishery. The AFA provides more flexibility for NMFS and the Council to develop management measures to govern the formation and operation of fishery cooperatives. The AFA-based alternatives in this EIS (Alternatives 2-5) differ with respect to the level of autonomy and flexibility provided to fishery cooperatives to manage BSAI pollock and sideboard fishing activities.

**Component 3: Sideboards.** Sideboards are measures to protect other fisheries from spillover effects resulting from the rationalization of the BSAI pollock fishery and from the formation of pollock fishery cooperatives. Participants in other fisheries are concerned about the potential for large and efficient pollock vessels and processors to spillover into other fisheries as a result of the AFA. This could occur as a result of rationalization in the BSAI pollock fishery as surplus vessels and processing capacity is no longer needed in the absence of a race for fish. Cooperatives also provide competitive advantages to the BSAI pollock fleet. For example, members of cooperatives have the flexibility to time their pollock fishing activities in a manner that would allow them to expand into other concurrent fisheries to a greater extent than would be possible if a race for fish still existed in the BSAI pollock fishery. The AFA authorized fishery cooperatives in the catcher/processor sector beginning in 1999 but did not provide for the formation of fishery cooperatives in the mothership and inshore sector until 2000. Largely as a consequence of this timing, Congress set out specific sideboard measures for catcher/processors in the AFA to begin in 1999 but deferred to the Council and NMFS to develop sideboard measures for the inshore and mothership sectors. The AFA-based alternatives differ in their approach to establishing sideboard amounts for the various AFA fleets and in their approach to managing sideboard fishing. The choice of appropriate sideboard measures depends in part on the approach taken with respect to managing fishery cooperatives. Alternatives that provide greater autonomy to cooperatives to manage their pollock fishing activities also provide greater autonomy to cooperatives to manage their participation in sideboard fisheries. Sideboards are also the only AFA component with measures that affect the crab and scallop fisheries off Alaska under Amendments 13 and 8 to the crab and scallop FMPs, respectively. AFA catcher vessels face sideboard limits on entry into crab and scallop fisheries and AFA processors face limits on the amount of crab they may process.

**Component 4: Catch weighing and monitoring requirements.** Because the catcher/processor sector was authorized to form fishery cooperatives in 1999, the AFA mandated specific observer coverage and scale requirements for AFA catcher/processors. All listed AFA catcher/processors are required to carry two NMFS observers at all times they are fishing for groundfish in the BSAI and they must weigh all catch on NMFS-approved scales. Because the AFA delayed the implementation of fishery cooperatives in the inshore and mothership sector until 2000, Congress left it to the Council and NMFS to develop adequate catch measurement and monitoring requirements for those two sectors. To a large extent, the

decisions made with respect to management of cooperatives and sideboard fishing determine what type of monitoring and catch weighing programs are appropriate. Alternatives that sub-allocate pollock and sideboard quotas to individual cooperatives require a more intensive monitoring regime than alternatives in which NMFS manages the fishing activities of AFA fleets in the aggregate.

## **Alternatives analyzed**

This EIS contains five management alternatives that are designed to capture the range of management options developed and considered by the Council over the two years in which Amendments 61/61/13/8 have been under development. During the course of developing a preferred alternative for Amendments 61/61/13/8, the Council examined a myriad of suboptions under each management component. However, it is not practical to construct an EIS that considers the environmental and economic consequences of every permutation of suboptions considered by the Council during the entire public process of developing a preferred alternative. Instead, the alternatives presented in the EIS are designed to capture the range of key issues and decision points that the Council, affected industry, and public have identified during scoping as critical from an environmental, economic, and socioeconomic perspective. The following is a brief synopsis of each alternative.

**Alternative 1 No action.** Under this alternative, NMFS would take no action to implement the provisions of the AFA. Management of the BSAI pollock fishery would return to the previous Inshore/Offshore management regime that governed the fishery from 1990 until the passage of the AFA in October 1998. While this alternative is clearly contrary to the statutory requirements of the AFA, it is included for analytical purposes to provide a baseline against which the environmental and economic effects of the AFA alternatives may be compared. The National Environmental Policy Act (NEPA) requires the examination of a no-action alternative even if such an alternative is contrary to existing law.

**Alternative 2 AFA baseline.** This alternative would implement the required elements of the AFA without additional modifications by NMFS or the Council. This alternative may be viewed as an “AFA baseline” alternative against which the Council and NMFS-proposed changes or modifications contained in Alternatives 3, 4, and 5 may be compared. Alternative 2 contains the four basic components required of all AFA alternatives: (1) measures defining the pollock sectors and the BSAI pollock allocations to each sector, (2) measures governing the formation and operation of fishery cooperatives, (3) sideboard protections for other fisheries, and (4) catch measurement and monitoring requirements for the AFA pollock fleet.

**Alternative 3 Preferred.** Alternative 3 would implement the required provisions of the AFA as set out in Alternative 2 with a series of modifications and additions recommended by the Council and NMFS under Amendments 61/61/13/8. Alternative 3 represents a co-management approach under which NMFS would issue sideboards and season/area apportionments of pollock at the sector level and would rely on fishery cooperatives for much of the day-to-day management of fishing activity at the co-op and individual vessel level. Successful implementation of Alternative 3 requires the development of an inter-cooperative agreement between all of the cooperatives to prevent season/area competition for pollock and an “Olympic” race for fish in sideboard fisheries. Alternative 3 contains various adjustments to the organizational rules for inshore catcher vessel cooperatives

designed to facilitate the formation and operation of such cooperatives and contains various other adjustments to harvesting and processing sideboards recommended by the Council.

**Alternative 4 Co-op autonomy.** Alternative 4 would implement the required provisions of the AFA as set out in Alternative 2 with a series of modifications and additions considered by the Council during the development of Amendments 61/61/13/8 that would allocate pollock to each co-op by season and area, and sub-allocate each groundfish and prohibited species catch (PSC) sideboard species to each cooperative. The intent of this alternative is to provide maximum autonomy to each individual cooperative to manage fishing activity in the directed pollock fishery and sideboard fisheries. In contrast to the co-management approach contained in Alternative 3, Alternative 4 would rely on NMFS management to regulate pollock and sideboard fishing by each individual cooperative. As a consequence, Alternative 4 contains substantially greater catch measurement and monitoring requirements than any of the other alternatives and would be the most burdensome and costly alternative for industry.

**Alternative 5 Independent catcher vessel proposal.** Alternative 5 is very similar to the preferred Alternative 3 with one significant change to the inshore co-op program to allow inshore catcher vessels to change cooperatives from year to year without spending a year fishing in the open access sector of the inshore fishery. The purpose of Alternative 5 is to increase the market flexibility for independently-owned catcher vessels. This alternative, (also known as the “Dooley-Hall” alternative after two of its primary proponents), was considered by the Council as a way to alleviate potential negative effects of the AFA on independently-owned catcher vessels. At its June 2000 meeting, the Council postponed action on this proposal until such time as adverse effects to independent catcher vessels could be demonstrated and gave notice that it could consider adopting this alternative at any point in the future. This alternative also was the subject of a separate analysis prepared for the Council by University of Washington researchers which is included as Appendix D.

## Summary of the environmental effects of the alternatives

The environmental effects of the alternatives under consideration derive primarily from changes in pollock fishing and processing patterns that are expected to result from the AFA-based structural and organizational changes in the BSAI pollock fishery. The most significant structural change resulting from the AFA is the replacement of the previous inshore/offshore allocation regime with a new allocation formula for the BSAI pollock fishery that increases the Community Development Quota (CDQ) allocation to 10 percent of the TAC and subdivides the remaining TAC 50 percent to the inshore sector, 40 percent to the catcher/processor sector, and 10 percent to the mothership sector as directed fishing allowances. The most significant organization change resulting from the AFA is the emergence of fishery cooperatives which have eliminated the Olympic-style race for fish and has allowed for rationalization of the fishery.

These major structural and organizational changes are expected to affect patterns of pollock fishing and processing in the BSAI. Among the effects examined are:

- **Changes to pollock fishing patterns.** How will each of the alternatives affect when and where pollock fishermen chose to fish?
- **Changes to fleet composition.** How will each of the alternatives affect the composition of the various pollock fishing fleets?
- **Changes to pollock processing patterns.** How will each of the alternatives affect pollock processing (i.e. processing locations, product forms, and recovery rates)?

The task of describing how a particular fishery is expected to conduct itself under a comprehensive new set of rules involves some degree of conjecture and speculation. This is because the circumstances that lead fishermen and industry to behave in a certain manner are dependent on such a wide variety of unpredictable factors including such things as weather patterns, sea ice conditions, the migratory patterns of the target species, worldwide market conditions, other regulatory changes, and a host of other factors that are difficult or impossible to predict. Nevertheless, the re-organization of the BSAI pollock fishery under the AFA that is reflected in each of the AFA-based alternatives (Alternatives 2-5) will result in certain predictable changes to fishing and processing practices and these changes will have some predictable environmental and economic consequences.

**Changes to fleet composition.** The composition of fishing fleets evolves in response to many variables including management measures, changing costs, and availability of target species. Since the passage of the AFA, all sectors of the BSAI pollock fleet have experienced reductions in fleet size as marginal vessels have been removed from the fishery through fishery cooperatives and buybacks. Fishery cooperatives, which allow for the transfer of fishing quota to the most efficient operators, have encouraged the removal of marginal vessels including both small vessels and large vessels that were inefficient, either because of high fuel costs or high maintenance costs. As a result, streamlined fleets developed by 2000 in all of the BSAI pollock sectors with the expectation that permanent fleet reductions will be on the order of 30 percent for all three sectors of the industry.

**Changes to fishing patterns: Temporal dispersion.** The emergence of fishery cooperatives in the BSAI pollock fishery has eliminated the open access race for fish and, along with other measures such as the buyout of nine catcher/processors, has resulted in a dramatic slowing in the pace of the BSAI pollock fishery. Several reasons account for this slower pace of fishing. First, under the system of cooperatives which operate as a type of private IFQ system, each operator is issued a fixed quota which may be fished or leased to other operators. Fishermen are, therefore, guaranteed a fixed harvest and no longer need to race for fish at the same time as the rest of the fleet in order to assure their harvest. Under the prior open access regime, fishermen were forced to fish at the start of every fishery opening announced by NMFS or they would forfeit catch to their competitors. Secondly, fishermen may fish slower under cooperatives because they may be targeting a more specific size range of pollock for fillet or surimi processing, or may be ranging farther in attempts to locate higher quality catch. Thirdly, under cooperatives, processors may chose to operate at different times of the year than their competitors for logistical or market reasons. For example, a processor may wish to schedule pollock processing to avoid conflicts with salmon or crab processing activity so that the same processing crews and facilities may be more efficiently used in multiple fisheries. And finally, differences in markets may lead one processing operation to operate at different times of the year from its competitors. The advent of fishery cooperatives has provided this flexibility to all sectors of the BSAI pollock fleet where previously they had to compete with each other directly during each open access pollock opening to guarantee a percentage of the harvest.

**Changes to fishing patterns: Spatial dispersion.** Since the implementation of the AFA in 1999, the Bering Sea pollock fishery also has disbursed more widely on a spatial basis than had been the case in previous years. The most significant reason for this spatial dispersion of fishing effort was the 1999 implementation of Steller sea lion protection measures which established strict limits on harvests within the Steller sea lion Conservation Area (SCA) which was composed of a combination of the Catcher Vessel Operational Area (CVOA) and the major foraging area designated as Steller sea lion Critical Habitat (CH). However, a second reason for the increased spatial dispersion may be the slower pace of fishing under the AFA cooperatives. Because pollock is a migratory species, a side effect of slowing the pace of fishing may be the fishermen need to range over a wider area to encounter migrating schools of pollock at different times of the year. However the extent to which increased spatial dispersion of fishing effort is due to a slower-paced fishery under the AFA is difficult to estimate because it is difficult to disentangle the effects of the AFA from the effects of Steller sea lion protection measures that were implemented simultaneously. Nevertheless, while increased temporal dispersion of catch is the most obvious and dramatic effect of AFA implementation, some degree of spatial dispersion of catch is also a likely consequence of the AFA.

**Changes to processing patterns.** Since implementation of the AFA, higher utilization rates have resulted from fishermen and processors being guaranteed a specific percentage of the BSAI pollock fishery. Since the approximate amount of pollock going into a processing plant is known at the beginning of the year, the only way to increase production is to better utilize the fish being delivered. Slowing the rate pollock can be harvested while still allowing vessels and processors to maintain their share of the fishery has resulted in more product being produced. This occurred because the factories can operate slower, taking more care to extract useable products from the fish that are harvested. Pollock processors are keenly aware of the importance of utilization rates in terms of their own bottom line.

Since implementation of the AFA, pollock processors have reported increases in product recovery rates. Utilization rates in the catcher/processor sector increased about 26 percent from 1998 to 1999 (the overall utilization rate in 1999 was just over 25 percent) and about 35 percent from 1998 to 2000 (the overall utilization rate in 2000 was just over 27 percent). Inshore sector processors increased their utilization rate about 2.3 percent from 1999 to 2000. Their overall utilization rates increased from 35.8 percent in 1999 to 36.6 percent in 2000 (their utilization rate was about the same in 1998 as it was in 1999). While their increase was not as great as that seen in the catcher/processor sector, it still indicates they were able to produce about 4,000 mt more product in 2000 relative to what they would have produced had their utilization rate remained at the 1999 levels. The mothership sector's overall utilization rate rose from 20.7 percent in 1998 to 26.6 percent in 2000, an increase of almost 29 percent.

**Effects of these changes on the environment.** The EIS examines how these projected changes to pollock fishing and processing patterns are expected to affect the physical and biological resources of the BSAI and GOA. Table ES-1 displays the major conclusions with respect to environmental impacts of the alternatives. In summary, conditionally negative effects on Steller sea lions and predator-prey relationships have been identified for Alternative 1 primarily as a result of the expected increase in temporal and spatial concentration of fishing effort under Alternative 1. Alternatives 2 through 5 are expected to have conditionally positive effects on Steller sea lions as a result of the expected temporal and spatial dispersion of fishing effort and the expectation that fishery cooperatives will provide increased ability to micro-manage fishing activity at the individual vessel level. This increase in management capacity is expected to facilitate the implementation of Steller sea lion protection measures under Amendments 70/70. For all other components of the environment analyzed, the effects of all of the alternatives was found to be either insignificant or unknown.

**Table ES-1 Summary of the predicted environmental effects of the alternatives.**

<i>Affected Environment</i>	<i>Alt. 1 (no action)</i>	<i>Alt. 2 (AFA baseline)</i>	<i>Alt. 3 (preferred)</i>	<i>Alt. 4 (Co-op autonomy)</i>	<i>Alt. 5 (Ind. CV proposal)</i>	<i>Comments and Summary</i>
<i>Effects on the physical environment</i>						
Substrate and benthic habitat	I	I	I	I	I	Pelagic trawl gear is mandated in the BSAI directed pollock fishery by regulation. The exclusive use of pelagic trawl gear in the BSAI directed pollock fishery is not expected to have significant impacts on benthic habitat and EFH.
Essential fish habitat (EFH)	I	I	I	I	I	
<i>Effects on marine mammals</i>						
Steller sea lions	CS-	CS+  (relative to the no-action alternative)	CS+  (relative to the no-action alternative)	CS+  (relative to the no-action alternative)	CS+  (relative to the no-action alternative)	Reverting to open access under Alt. 1 could lead to increased spatial/temporal concentration of catch and exacerbate Steller sea lion protection efforts. Formation of co-ops under Alts. 2-5 could decrease the spatial/temporal concentration of catch. Also, the increased ability to micro-manage vessel activity through co-ops is likely to facilitate the implementation of Amendment 70/70 protection measures.
ESA-listed cetaceans	I	I	I	I	I	These species to not prey primarily on pollock and/or their primary range does not overlap significantly with the primary pollock fishing areas.
Other cetaceans	I	I	I	I	I	
Northern fur seals	U	U	U	U	U	A shift in fishing effort northward away from the Steller sea lion conservation area (SCA) as a result of Steller sea lion protection measures and the emergence of fishery cooperatives could result in increased pollock removals from Northern fur seal foraging areas around the Pribilof Islands. The effects of this potential northward shift in fishing effort on Northern fur seals is unknown.
Harbor seals	I	I	I	I	I	These species to not prey primarily on pollock and/or their primary range does not overlap significantly with the primary pollock fishing areas.
Other pinnipeds	I	I	I	I	I	
Sea otters	I	I	I	I	I	
<i>Effects on fish and shellfish species</i>						
Pollock	I	I	I	I	I	None of the alternatives would affect total removals of pollock or the TAC-setting process.
Other groundfish	I	I	I	I	I	None of the alternatives would affect total removals of other groundfish species or the TAC-setting process for those species.
Prohibited species	I	I	I	I	I	Bycatch rates of all prohibited species in the directed pollock fishery are low and are not expected to significantly affect the health of those species under all of the alternatives. The increased ability of co-ops to micro-manage individual vessel activity may enable co-ops to further reduce salmon bycatch.

<i>Affected Environment</i>	<i>Alt. 1 (no action)</i>	<i>Alt. 2 (AFA baseline)</i>	<i>Alt. 3 (preferred)</i>	<i>Alt. 4 (Co-op autonomy)</i>	<i>Alt. 5 (Ind. CV proposal)</i>	<i>Comments and Summary</i>
Forage species	I	I	I	I	I	Bycatch of forage species is negligible under all of the alternatives
<i>Effects on seabirds</i>						
Non-piscivorous seabirds	I	I	I	I	I	Information voids for various aspects of seabird ecology make it difficult to predict impacts of fishery management changes on seabirds. Effects of spatial/temporal concentrations of prey on piscivorous seabirds considered unknown and insignificant for non-piscivorous seabirds.
Piscivorous (fish eating) seabirds	U	U	U	U	U	
<i>Ecosystem effects</i>						
Predator-prey relationships	CS-	U	U	U	U	Concentrated removals of pollock has been a concern in status-quo regime, especially with respect to Steller sea lions. The effects of a more dispersed fishery under Alternatives 2 through 5 on predator-prey relationships are considered unknown
Energy flow and balance	I	I	I	I	I	Combined evidence regarding the level of discards relative to natural sources of detritus and no evidence of changes in scavenger populations that are related to discard trends suggests that all of the alternatives would have insignificant ecosystem impacts through energy removal and redirection.
Biological diversity	I	I	I	I	I	No fishing-induced extinctions of groundfish or other marine species have been documented in the last 30 years or so. No fishing-induced changes in trophic diversity have been detected under current management regime.

S- Significant Negative  
 CS- Conditionally Significant Negative  
 I Insignificant  
 CS+ Conditionally Significant Positive  
 S+ Significant positive  
 U Unknown



## Summary of the economic and socio-economic effects of the alternatives

The EIS also examines the economic and socio-economic impacts of the alternatives. Impacts to the BSAI pollock industry, the Alaska groundfish industry as a whole, affected coastal communities, U.S. consumers, and net-benefits to the Nation are examined and summarized below.

**Benefits to the BSAI pollock industry.** The co-op system that is authorized under Alternatives 2 through 5 is expected to increase the profitability of BSAI pollock fishing and processing. The AFA reduced the transactions costs of organizing to eliminate problems flowing from the common property status of fisheries resources. The AFA defined and limited potential participants in the fishery, created relatively homogenous groupings of operations within the fishery, and provided the legal structure for the formation of the cooperatives within those groupings. The cooperatives, and other institutions (such as the Intercooperative Agreement) that emerged from the AFA, led to significant rationalization of the fishery harvest. This has lead, and will almost certainly continue to lead, to operational economies for the pollock fishery in the BSAI.

These economies flow from the elimination of excess capital and labor from the fisheries, and from more effective coordination and use of the vessels and crew that remain. These economies will be greater for alternatives that allow relatively greater reductions in fishing capacity, and for those options that provide relatively more flexibility for cooperatives in their operations.

Experience in 1999 and 2000 indicates that the cooperatives are taking advantage of the program to remove excess fishing capacity with expectations of up to 30 percent reductions in fleet size for all three sectors of the BSAI pollock fishery. The co-op system also allows cooperatives to make more effective, coordinated, use of the vessels remaining in the cooperatives. This is expected to reduce costs and increase revenues in many ways:

- The end of the race for the fish allows operations to fish more slowly and to process more carefully. The result is likely to be an ability to obtain more added value from harvested fish. In 1999, the first year of the cooperatives, the vessels in the catcher/processor sector were able to increase utilization of harvested pollock resources by about 20 percent.
- Reports from catcher/processors suggest that, freed from the “race for the fish” the operators have been harvesting fewer fish per tow. This reduces bruising in the flesh, and may have contributed to improved roe quality.
- Operations are able to trade quota allocations between vessels within a given cooperative. This makes it possible to harvest allocations from the vessels that can do so at least cost in a given time and place.
- The increased flexibility offered by the cooperative system also allows fleets to respond more rapidly to market cues. This was an advantage to the catcher/processor sector in early 1999, when this flexibility allowed them to respond to increased demand and rising fillet prices by increasing fillet production while decreasing surimi production.

There are, however, factors built into the AFA that will probably prevent the industry from fully maximizing the profitability of the fishery. Although the AFA has eliminated the race for fish and the associated perverse incentive to increase fishing capacity, incentives to maintain existing capacity remain for several reasons. First, the AFA may be revised or repealed in the future; therefore, risks are involved with retiring excess fishing and processing capacity. Second, the current rules governing cooperatives in

the inshore sector will tend to limit consolidation of processing that would eliminate excess processing capacity. Third, inter-annual transfers among vessels of catch histories and the associated shares of the TAC for the inshore sector are prohibited; therefore, there is a strong incentive not to retire catcher vessels.

**Benefits to U.S. consumers.** The end of the “race for the fish” will make it easier for fishermen and fish processors to address the needs of their different markets. The race for fish induced processors to emphasize surimi production because it is the fastest way to process large quantities of fish caught at one time. Under the AFA-based alternatives, processors will have the time to produce products of higher value. The elimination of the race for the fish has allowed companies to increase the yields from pollock harvests. Processors are also now able to concentrate on the production of less valuable ancillary products such as oil and fishmeal. The end of the race for the fish also provides vessels more time to search for the size of fish most conducive to the products processors want to produce leading to increased product recovery and value. Another benefit has been that vessels can now justify catching fewer fish per trip. Catching fewer fish per trip improves product quality and utilization by reducing bruising and damage to the fish.

**Safety.** Commercial fishing is a dangerous occupation. From 1991 to 1998, the occupational fatality rate in groundfish fishing off of Alaska was 46 in 100,000. This occupational fatality rate is about 10 times the national average. Part of the reason is that fishermen who compete for fish in a common property fishery are often compelled to fish at times and places that are not very safe if they want to take a share of the fishery total allowable catch. Moreover, higher costs and lower revenues in a common property fishery may lead to lower profits margins and, indirectly, to less investment or attention to issues of safety.

This suggests that the introduction of the co-op system will allow fishermen more flexibility in their harvest and permit a greater consideration of safety issues. In addition, the program should increase the profitability of the fishery and lead, indirectly, to increased investment in safety. These factors should reduce risks of death, injury, and property loss in the BSAI pollock fishery.

Reports from the 1999 and 2000 fishing seasons indicate that the pollock fishery is being conducted in a safer manner under the AFA. The U.S. Government Accounting Office (GAO) reports that the pollock fishing industry views itself as safer. The GAO report noted, “Deep-sea fishing in the Bering Sea has historically been a hazardous occupation, and the hazards are increased when vessel operators believe they must operate in extremely bad weather to land a share of the catch. Because the cooperative agreements give members specific shares of the catch, vessels can now avoid fishing in such weather conditions.”

**Impacts on other fisheries.** The passage of the AFA and the introduction of co-ops in the BSAI pollock fishery raised concerns among fishermen in other fisheries that the rationalization of the pollock fishery would (1) free up excess fishing and processing capital that could be exported to other fisheries, and (2) would permit a more organized harvest of pollock and allow vessels and processing plants continuing in the pollock fishery to reallocate at least some of their time and capacity to other fisheries.

To protect the fishing and processing operations involved in other fisheries, the AFA provided for an elaborate system of “sideboards” or restrictions on what AFA vessels and plants could harvest and process in other fisheries. These sideboard regulations, and the ways they vary across alternatives, are described in detail in Chapter 2 of the EIS. In general, the sideboards work to limit AFA harvests of sideboard species to the proportions of the harvests of these species taken by the AFA sectors in the period 1995 to 1997. The alternatives do vary somewhat with respect to the exemptions to these

limitations, and there are variations in the computations used to relate sideboard limits to harvests during that period.

The efficiency impacts of the sideboards on other fisheries are difficult to determine and may not be large. Overall the catch of non-pollock species by AFA vessels may be somewhat reduced by these amendments, because the groundfish sideboards are based on landed catch history under the preferred alternative and the crab sideboards are more restrictive than the current license limitation program in most cases. Yet given the open access nature of these fisheries and the capacity that exists in other fleets, any harvest forgone by the AFA fleet will almost certainly be harvested by members of the non-AFA fleets. Differences among the alternatives for effecting sideboards do have the potential for distributional gains and losses; primarily these are trade-offs between the AFA and non-AFA vessels. While relative operating costs and other factors would affect the “net” results of such trade-offs, the basic intent of the sideboards is to maintain the status quo, in terms of the distribution of harvest between AFA and non-AFA vessels, and therefore inter-sectoral “net” impacts would be expected to tend towards neutral.

**Summary of the benefit-cost analysis.** Table ES-2 summarizes the benefit-cost analysis. Although the analysis is qualitative, the results permit a partial ranking of the different alternatives. Alternative 1, the fishery prior to the AFA, produces the smallest benefits. Moreover, it is precluded under the terms of the AFA. Of the four alternatives that are legal under the AFA, Alternative 2, minimum implementation, has the lowest net benefits. The problems with this alternative flow from the relatively large costs it imposes on the formation of the co-ops in the inshore catcher vessel sector. This raises questions about the ability of this sector to rationalize its part of the pollock fishery through the formation of co-ops. Alternative 4 appears to produce higher net benefits than Alternatives 1 and 2 because it tends to facilitate inshore co-ops, but it may produce lower net benefits than Alternatives 3 and 5 because of the high monitoring costs it would impose on industry.

Table ES-3 suggests that Alternative 3, has less net benefits than Alternative 5. Nevertheless, Alternative 3 has been designated as the “preferred” alternative. Benefit-cost analysis is only one element in a public decision making process. Benefit-cost analysis is based on very specific assumptions that not all persons may hold. Issues other than social efficiency may be important to many persons. For these reasons this benefit-cost analysis is supplemented with an analysis of the distributional implications of the alternatives, and an analysis on the impacts on small business, non-profit, and government entities in the accompanying Initial Regulatory Flexibility Analysis. In addition to these concerns, this benefit-cost analysis has been qualitative, and has incorporated a margin of error that makes it impossible to say for certain that Alternative 3 has smaller net benefits than Alternative 5.

Moreover, Alternative 3 is a compromise that was developed in legislative and Council processes. It incorporates compromises among interest groups that were essential to bringing the AFA and the implementing regulations into existence. In particular, the difference between Alternatives 3 and 5 reflects a decision about the allocation of AFA benefits between inshore processors and inshore catcher vessels. In postponing action on the independent catcher vessel’s proposal reflected in Alternative 5, the Council chose not to change the terms of this agreement after it had been reached, but indicated that it could take the issue up again at any point if evidence suggested that independent catcher vessels were harmed as a result of the co-op structure contained in the AFA. Thus Alternative 3 is the preferred alternative, although it may not absolutely maximize net benefits as interpreted in benefit-cost analysis.

**Table ES-2 Summary of benefit-cost analysis.**

<b>Benefit/Cost</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
Organizing theme	<i>Open access "race for fish" under pre-AFA inshore/offshore regime</i>	<i>Implement minimum requirements of AFA without changes</i>	<i>Foster development of co-ops and inter-co-op agreements with NMFS-industry co-management of pollock and sideboard fishing</i>	<i>Maximize autonomy for individual co-ops to manage pollock and sideboard fishing at the individual co-op level</i>	<i>Increased market freedom for independent catcher vessels.</i>
Capital and operating cost reductions	Least	This alternative allows co-ops in the catcher/processor sector but imposes higher costs (that in Alternatives 3-5) for inshore catcher vessel co-ops. Benefits are greater than for Alternative 1, but less than for Alternatives 3 to 5.	This alternative facilitates co-ops in the inshore sector as well as the catcher/processor sector. It is thus expected to produce significantly larger social net benefits than Alternatives 1 and 2.	This alternative facilitates co-ops in the inshore sector as well as the catcher/processor sector. It is thus expected to produce significantly larger social net benefits than Alternatives 1 and 2.	This alternative facilitates inshore co-op formation in a way that is similar to Alternative 3. In addition, it allows inshore catcher vessels more flexibility to switch co-ops than does Alternative 3. Therefore, it may produce larger social net benefits.
Management expenses	Least	Second least expensive	Tied for third least expensive	Most expensive due to increased monitoring costs.	Tied for third least expensive
Consumer benefits and revenues from abroad	Least	Higher due to cooperative flexibility	Higher due to cooperative flexibility	Higher due to cooperative flexibility	Higher due to cooperative flexibility
Impacts on other fisheries	No large and systematic distinction identified among these alternatives.				
Relative ranking (from 1=highest net benefits to 5 = lowest net benefits)	5	4	2	3	1

**Impacts to fishing communities.** Four fishing communities (Unalaska/Dutch Harbor, King Cove, Sand Point, and Akutan) are directly affected by the presence of AFA processors. Of these four communities, Unalaska/Dutch Harbor and King Cove are expected to benefit from the AFA-based alternatives. Impacts on these communities would be linked with benefits that would result from increased inshore pollock allocations and from AFA cooperatives by the establishment of a stable long-term supply of pollock to their neighboring shore-based processing plant. Such economic stability is expected to translate positively to these two neighboring communities.

The impacts of the AFA on Sand Point may be negative. While this community historically received deliveries of BSAI pollock, these deliveries may cease under the AFA-based alternatives because the Trident plant in Sand Point is not associated with a catcher vessel cooperative. Vessels that had historically delivered to that plant had delivered more pollock to Trident's Akutan plant and were therefore eligible to join that cooperative. This means that the long-term flow of BSAI pollock into the Sand Point community is less stable than under the status quo.

The community of Akutan is not identified as a small community that would be impacted by AFA fishery cooperatives. This determination is based on materials provided in 1995 to the Council, NMFS, and the State of Alaska by the Aleutian Pribilof Island Community Development Association on behalf of Akutan. The Council, State of Alaska, and NMFS, agreed these materials sufficiently documented no significant impacts were accrued by the community of Akutan from the presence of the neighboring Trident Seafood processing facility. This claim of no significant economic linkage between the Trident facility and the community of Akutan directly resulted in a 1996 regulatory change that included Akutan as an eligible participant in the CDQ program.

**Impacts to CDQ groups.** A total of six groups of Western Alaskan Communities comprise the CDQ program. These groups are considered small entities by NMFS and the Small Business Administration. No negative impacts should have been realized by these groups as a result of the AFA. The overall allocation to the CDQ program is increased from the 7.5 percent of the BSAI TAC (Alternative 1 - status quo) to 10 percent annually under Alternatives 2 through 5. The change amounts to a 33 percent increase in the overall CDQ pollock allocation. That increase is equal to 25,000mt when the BSAI TAC is 1 million metric tons. In revenue terms, if CDQ groups receive 8.5 cents per pound for their pollock allocation, it equates to an annual increase in revenues of over \$4.6 million. On average, that is equal to an annual increase of more than \$750,000 per CDQ group.

In addition to the increased CDQ allocation, the more stringent U.S. ownership requirements under the AFA have caused at least one of the largest pollock companies to restructure its ownership. During the restructuring process, the company formerly known as American Seafoods sold 20 percent of the entity to a CDQ corporation. Therefore, changing the ownership requirements has allowed some small entities to increase their ownership stake in the BSAI pollock fishery. If profits are being generated in the fishery, and it is assumed that they are, this is also a benefit to the CDQ groups, since these groups would share in the profits generated by the company.